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Providing a "challenge function": Government social researchers in the UK's Department of Energy and Climate Change (2010–2015)

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ABSTRACT Recent research in Science and Technology Studies (STS) and related fields has scrutinized UK policy institutions' governance of technical policy domains, revealing the prevalence of naïve assumptions about citizens' engagement with science and technology. Government officials are characterized as wedded to institutional commitments and averse to criticism. From that perspective, technical policy issues such as energy and climate change are addressed without the sufficient interrogation of assumptions about citizens. This study, based on an analysis of 15 interviews with civil servants and over 40 documents (including evidence reviews, policy reports, stakeholder publications and parliamentary records), presents a more varied picture within the Department of Energy and Climate Change (DECC) during the years of the Conservative and Liberal Democrat Coalition Government (2010–2015). It focuses on two priority policy areas of the time: the Green Deal and the installation of smart meters in UK homes. It is shown that government social researchers in DECC have aided policy officials to rethink their understandings of citizens. Social researchers have achieved this through their institutionalized commitment to providing an evidence-based "challenge function". I conclude that policy development on technical topics is more likely to be effective if policy officials engage with social researchers at an early stage, and if social researchers receive senior civil service representation and support. This article is published as part of a collection on scientific advice to governments.

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Introduction

For many years, researchers in STS have raised concerns with western governments' engagement with scientific advice in policy areas relating to science and technology. A key strand of work has revealed how scientistic and technologically determinist assumptions about citizens pervade policy-making processes, such that decisions are made with insufficient consideration of how different groups in society might respond to experts' knowledge claims or new technologies (Winner, 1992; Jasanoff, 2004; Irwin, 2013). Citizens are imagined to behave in highly predictable and uniform ways, and motivated by the same concerns, desires and values as decision makers (Winner, 1992: 359, Kearnes *et al.*, 2006: 299).

Where STS authors offer explanations for UK policymakers' apparent ignorance of citizens' diverse perspectives and engagement with science and technology, they often invoke the claim that organizational structures and narrow, "instrumental rationales" preclude government officials from reflecting on such matters (Wynne, 1993; Chilvers and Macnaghten, 2011: 539; Pallett and Chilvers, 2013). This, coupled with other social scientists' depictions of civil servants in the UK Government as averse to criticism (LSE GV314 Group, 2014, citing Norris, 1995), paints a rather pessimistic picture of the potential for better understandings of citizens to inform and influence policymakers' work in technical policy areas.

This article nuances the picture somewhat, by elucidating a previously unexamined means by which scientistic and technologically determinist assumptions have been influentially challenged within the UK's civil service. It does this by exploring how civil servants have conceived and operationalized the idea of a "challenge function" with respect to the role of social science expertise in the Department of Energy and Climate Change, during the years of the Conservative-Liberal Democrat Coalition Government (2010–2015). Specifically, it explores the experiences of analysts within the department who belong to the Government Social Research Service (henceforth "GSR").

Government social researchers are a group of analysts in the civil service who are employed in government departments and agencies to provide social science advice (HM Government, 2016). To become a formally accredited government social researcher, one must undergo a written examination and interview. These analysts are typically responsible for commissioning social research projects, engaging with external experts and translating analysis into the policy process. This can involve exploring an evidence base for alternative courses of action, assessing how the impacts of different options may be distributed across society and/or designing and commissioning policy evaluation. By focusing on government social researchers within DECC, this article argues that challenge is more prevalent and influential in policy areas dominated by scientific and technological issues than might be expected given the above cited literature.

The idea of providing a "challenge function" is engrained in the guidance provided to all analysts who work in the civil service by the formal accreditation bodies which support them. Government scientists, engineers, economists, statisticians, social researchers and operational analysts are all expected to use their expertise to challenge their colleagues' ideas and assumptions (for examples from the Government Social Research Service, see GSR Unit, 2006; Campbell *et al.*, 2007; for examples from other analytical schools see, Government Economic Service, 2007; Government Science & Engineering, 2013). Indeed, as part of the formal process for assessing individual researchers' suitability for promotion, an analyst's record for providing challenge is explicitly considered (for example, Government Social Research Service, 2010). In this way, individual researchers are assigned responsibility for providing a challenge function within their area of work.

Yet, the Government Office for Science ("GO-Science") has found that government analysts do not always challenge their colleagues' claims when they judge them to conflict with their understanding of the available evidence (2013: 20). Consistent with an individualized understanding of the challenge function, they account for this in terms of analysts' personal failings, such as a lack of willingness or confidence, and cite a personal tension between an analyst's commitment to supporting the organization on the one hand and putting their head above the parapet in a way that could damage their own career on the other (Government Office for Science, 2012: 20, 31). The implication is that analysts' performance of challenge relies upon their judgement as to whether the evidence will be appreciated or not by colleagues—but nothing is said of the conditions which affect whether it is likely to be well-received or not.

As Owens (2015: 150) has written with respect to the Royal Commission on Environmental Pollution (RCEP), interdisciplinary challenge between committee members inspires learning, enables deeper debate about the assumptions and contingencies underlying a particular framing of an issue, encourages experts to reflect on alternative solutions or problem framings, and ultimately improves the quality of scientific advice provided. Her analysis highlights what is lost in GO-Science's overly individualistic account of the challenge function: an appreciation of the "circumstances of influence" (Owens, 2015: 124), which underpin its effective operation. Acknowledging this requires us to go beyond individual attributes such as confidence or willingness. We must pay attention to the social and material conditions that shape the type of influence that analysts can wield in a team. In her analysis, Owens (2015: 164–168) emphasizes that the receptivity of the RCEP's advice among policy audiences depended upon not only the commission's rhetorical and strategic approaches to dissemination, but also upon government officials' perceptions of the RCEP's expertise, legitimacy and autonomy, as well as a range of political, institutional and economic contingencies that conspire either favourably or against the salience of the commission's advice at a given time.

In a similar vein, this article highlights a wide range of factors beyond individuals' willingness or confidence that shape analysts' provision of internal challenge in the civil service, through a close examination of social researchers' engagement with two policy areas in DECC. As we will see, key factors include: the relative status of analysts within the organizational and epistemic hierarchies in the civil service, the support and encouragement they receive from colleagues, and their access to relevant knowledge and resources. These factors, which play out in contingent circumstances, are distributed across communities and networks rather than being intentional characteristics associated with individual analysts. Appreciating this can help us to understand what can enable or inhibit successful challenge within UK policy institutions, and provide a more comprehensive basis on which to consider how the influence of analysts' challenge function within a policy institution could be strengthened.

The paper proceeds as follows: after outlining the methodology used to generate and analyse the data presented here, I provide a background to the emergence of social researchers within the Department of Energy and Climate Change. Then each of the following two sections focuses on a key policy area during the Coalition Government years in which social researchers worked closely with policy colleagues (the Green Deal and smart meters implementation). These sections highlight the circumstances in which the analysts provided challenge and consider the extent of influence their advice commanded. The penultimate section

identifies some constraints on social researchers' ability to exercise challenge, before a concluding discussion of the findings in relation to the literature on UK policy institutions' understanding of citizens in technical policy domains.

Methodology

This study reports findings from a project that explores the role of government social researchers in DECC. The analysis presented here is based upon semi-structured interviews with 15 civil servants, which is commensurate with related studies in policy settings (for example, Rhodes, 2005; Pallett and Chilvers, 2013). The officials were predominantly current or former employees in DECC. Ten of them self-identified as social researchers, while the rest held positions in other analysis or policy-related posts. Most of the social researchers were experienced "middle-management" officials at grade 6 or 7—as is typical for the profession—but a handful of senior civil service researchers and other colleagues in DECC were also interviewed.

Middle-management civil servants' personal details are rarely listed in departmental publications or official records in the UK. Therefore, a handful of actors who played instrumental roles at different points in the department's history were initially identified through an online search of keywords (e.g. "social research", "customer insight", "policy evaluation", "social science" and "DECC"), and through chance encounters at academic events prior to starting fieldwork. The rest were then selected through a process of "snowballing" (Bryman, 2004: 334)—with a degree of "purposive sampling" (Punch, 2014: 161) to ensure that enough material was obtained for focused case studies on specific policy areas.

Data generated in this way were iteratively triangulated (Stoecker, 1991: 92) with an analysis of over 40 publicly available government documents (such as policy reports, findings from social research projects, economic impact assessments, politicians' speeches, guidance for government analysts and parliamentary records). These provided additional insights into the context in which social researchers operated. Documents were selected through a combination of online searches and the suggestions of interviewees. In vivo coding (Corbin and Strauss, 2008: 160) using NVivo software revealed the strong associations between social researchers and the provision of challenge in DECC, and inspired this study.

By beginning the transcription and analysis of data during the interview stage (following Miles and Huberman, 1984: 49), I was able to spot emerging gaps in my understanding and address them so as to eventually reach data saturation within specific policy areas (Corbin and Strauss, 2008: 148). The examples discussed in the sections "Social research and DECC" and "Social research and the Green Deal" were chosen for the relatively high degree of influence achieved by social researchers under the circumstances, and for the breadth of material obtained on the topic. The internal validity of findings was strengthened through the assistance of current and former civil servants in DECC, who checked an earlier draft of the paper for factual inaccuracies while respecting the researcher's independence over questions of subject matter, analytical perspective and interpretation. Any remaining errors are my own.

Social research and DECC

There is no formal requirement for policymakers to consult social researchers, nor to seek out their analytical challenge, and therefore there was nothing compelling DECC's senior officials to employ social researchers when it was first formed. DECC was created in October 2008 in what has been described as a technocratic period of policy-making with respect to climate change mitigation (MacKerron, 2009: 87). Its remit was predominantly framed in economics and engineering terms—to ensure the security and cost effectiveness of energy markets, and to reduce greenhouse gas emissions in the most efficient way (National Audit Office, 2009: 8). The senior officials saw no clear case for employing social researchers to aid policy design and development in this remit. Nor were there any social researchers already based within the teams that came to comprise DECC: the energy generation and infrastructure teams within the then Department for Business, Enterprise and Regulatory Reform (DBERR) and the energy efficiency and climate change teams from the Department for Environment, Food and Rural Affairs (DEFRA). The officials from DBERR previously had minimal engagement with social research while DEFRA's civil servants did work closely with social researchers, but the latter were situated in a separate central analytical team with cross-cutting responsibilities. Hence, when these teams moved to DECC no social researchers were included among them.

Interviewees reported that, within the first few months, concerns about the department's lack of in-house social research expertise were expressed by social researchers in DEFRA and by the Head of the GSR Service across government. Some of DECC's own natural scientists and policy officials also drew on their experience in DEFRA to argue that the department needed social researchers to contribute to policy development, specifically for their recognized expertise with respect to understanding and influencing citizens' behaviours—a specialism that had recently acquired prominence amongst policymakers (Halpern *et al.*, 2004; Darnton, 2008). But without support from the most senior officials within DECC, their case was inconsequential.

The situation changed after the first year, due to a routine review of the department organized by the Head of the Home Civil Service (Cabinet Office, 2009). This capability review was described by respondents as carrying significant weight among senior officials. It analysed the department's allocation of resources with regards to defined criteria, taking into account the views of internal and external stakeholders. The review identified a lack of expertise typically associated with government social researchers, as follows:

> Stakeholders and staff told us that DECC's knowledge of customers is weak and the Department is badly in need of social and behavioural research capability. The Department recognises that an in-depth understanding of consumer behaviour and how to influence it is an essential prerequisite for meeting the consumer-related targets on climate change. (Cabinet Office, 2009: 8)

It thus gave legitimacy to the case for acquiring social science expertise in DECC—especially with regards to the behavioural research that social researchers previously worked within DEFRA.

Still, this was not enough to ensure that DECC would recruit government social researchers or expose officials to social researchers' challenge. Government social researchers were not the only group of civil servants who claimed expertise in understanding and influencing citizens' behaviour. Reportedly due to the preference of senior officials, who were probably influenced by the Cabinet Office's new Customer Insight Forum promoting the use of "customer insight" across government, DECC's leadership decided that the gap in expertise should be addressed by building a team of customer insight specialists. This was a new body of civil servants who apply marketing and communications techniques to disseminate amongst officials an understanding of citizens in the context of their everyday lives (Cabinet Office, 2006). Customer insight specialists do not share

government analysts' commitment to providing challenge, nor are individuals' competencies assessed based on this.

Commitment to challenge aside, there are strong similarities between customer insight and social research. Like social research, customer insight is intended to improve policy designs by "providing a rich and deep understanding of our customers, their needs and what we can do to help ensure our services fit usefully into their lives" (Cabinet Office, 2006: 9). Moreover, customer insight specialists make use of social research methods such as interviews, surveys and observation.

Yet, the Customer Insight Forum defines the "discipline" in contradistinction to social research (Cabinet Office, 2006: 9). They emphasize that customer insight requires a "leap" beyond social research by developing rich narratives about people that can make policies and services resonate with an intended audience (Cabinet Office, 2006: 9). In addition to conventional social research data sources, customer insight specialists may also develop narratives from the experiences of staff, media stories and current affairs or through engaging citizens (Government Communications Network, n.d.).

From the Customer Insight Forum's view, the value of customer insight is "not linked to the specific tools that have been used to generate it, but to its ability to tell a single, clear and compelling story" (Cabinet Office, 2006: 9). This has arguably left the specialism vulnerable to being viewed as less methodologically sound than social research—an opinion reportedly held across a wide range of civil servants:

> And within government, people would look at social researchers as somehow possessing of more intellect and somehow more robust credentials. And customer insight was a little fluffy, a little bit softer really. (A former social researcher in DECC (1)).

The formation of a Customer Insight Team was thus slightly different from what the Government Social Research Unit and many of DECC's own civil servants were arguing for. But due to a fortuitous coincidence, the creation of this team did bring social researchers into the department to contribute to policy development and implementation through challenge based on evidence about citizens.

The department's first Head of Customer Insight was recruited from a research consultancy in spring 2010, where the specialist gained years of experience conducting research about citizens in relation to energy and environment issues. Also in spring 2010, the Chief Economist appointed a social researcher to help officials design and conduct policy evaluations. The Head of Customer Insight and the social researcher soon met and found commonalities in their approaches and objectives. With the social researcher's support, and in acknowledgement of the GSR community's reputation for quality, the Head of Customer Insight committed to adhering to GSR standards and sought to build her team through employing accredited social researchers (Government Office for Science, 2012, Annex A: 96). This official subsequently gained GSR accreditation in 2013. As such, under this specialist's leadership, the Customer Insight Team took a hybrid customer insight-social research form; with a commitment to using GSR-approved research methods to develop and share deeper insights into people's views and activities, and with a dedication to providing challenge.

From summer 2010 onwards then, DECC started to employ social researchers—particularly to help civil servants to understand citizens and to design and deliver policy evaluations. The next two sections focus on two of the earliest examples in which social researchers have worked with policy teams in DECC: the Green Deal and smart meters implementation. These policy areas are similar in that they were priorities under the Coalition Government, were managed by officials in the teams from DEFRA, and rely upon successful engagement with citizens across society for their success. An important difference is that the Green Deal requires energy consumers to opt in (DECC, 2010a), whereas energy suppliers will offer to install smart meters for all customers for free (DECC, 2013).

Social research and the Green Deal

The Green Deal was a "flagship" policy of the Coalition Government between 2010 and 2015. It was based on the idea of a pay-as-you-save scheme, in which citizens could borrow money for the purposes of improving the energy efficiency of their home, saving them money on their utility bills (DECC, 2010a). Householders would repay the privately-lent finance over an agreed number of years as savings accrue in terms of reductions in bills. The policy's origins lie in a paper by the UK Green Building Council (2009), and was listed in each of the three major parties' political manifestos prior to the general election in 2010 (Conservative Party, 2010; Labour Party, 2010; Liberal Democrats, 2010).

The Green Deal was celebrated by Coalition Government ministers in 2010 as "the most ambitious energy-saving plan ever put forward" (Huhne, 2010). It was presented as a policy instrument that would stimulate a "revolution" in domestic energy efficiency—and one that would appeal to "every home in Britain". It would support the retrofitting of 14 million homes by 2020, and generate hundreds of thousands of jobs until 2030 (DECC, 2010b). Looking beyond politicians' rhetoric, DECC's first Green Deal economic impact assessment was similarly ambitious. Under a "high" uptake scenario, 11.5 million measures would be installed in homes across the United Kingdom by 2020, with the expectation that multiple measures will be installed in some homes (DECC, 2010c: 19). In this scenario, projected reductions in non-traded carbon emissions amounted to 4.9 $MtCO_2e$ by 2020 (DECC, 2010c: 19). The "low uptake" scenario projected that the scheme would result in the installation of 7.1 million measures by 2020, saving 3.3 $MtCO_2e$ in non-traded carbon emissions.

The success of this policy hinged on positive reception from citizens. Aware of this, DECC did work with the Energy Saving Trust to commission pilots of pay-as-you-save schemes as early as 2009 (DECC & Energy Saving Trust, 2011). But the Green Deal was not designed with a particular audience in mind, nor with a recognition that different consumers could be motivated to engage with the scheme differently. The ideas of saving money and reducing carbon emissions were continuously invoked as if they would have universal appeal—a "no brainer" for all households in society (Huhne, 2010; DECC, 2011a; 2012a). These assumptions were not originally identified as problematic in a department in which senior officials did not, at first, see a need for social research expertise to inform policy development and implementation processes within the organization.

As discussed in the previous section, a Customer Insight Team that would employ social researchers began to be built in mid-2010. When the first members of the Customer Insight Team joined DECC, they were situated within the Green Deal team. Interviewees explained that this was because officials saw the Green Deal as a top-priority policy area, and one in which a deeper understanding of consumer views was considered useful for maximizing the scheme's success. It was too late for the social researchers to contribute towards the design of the scheme, but they could help the officials to prepare for its implementation.

Working closely with policy officials and seeking to prove the value of their contributions to the department, the researchers'

first projects were designed to understand how citizens perceived the idea of a pay-as-you-save scheme. Three research reports were commissioned and produced between late 2010 and early 2011, which brought to the policy team's attention specific issues concerning consumer uptake (DECC, 2011b, c, d). These studies revealed that the Green Deal scheme was most likely to appeal to those citizens who already saw a need to improve their home's energy efficiency. They also found that many people would be reluctant to pay for energy efficiency measures using borrowed finance – especially if that finance is tied to the house and could not be repaid faster than the agreed payment term. These findings achieved some immediate influence in the form of "visible, short-term responses" (Owens, 2015: 127), as noted by a social researcher:

> I think all of the Green Deal work was quite influential—like, showing that the demand for Green Deal was likely to be quite low probably led to a massive kind of push on trying to make it more appealing from a policy perspective—I'm not saying that it was only the social research that did it, but I think they were kind of clear examples. (A former social researcher in DECC (2)).

Adjustments to the scheme that followed from these insights included enabling customers to pay back the debt early, and an additional investment of £200 m from the Treasury Office to help maximize its reach through the provision of introductory offers for new customers. In addition, the findings were incorporated in the next economic impact assessment, resulting in the revising down of the expected number of installations to approximately 3.6 million by 2020 (DECC, 2011e: 75).

The social research projects also planted some seeds of doubt over the assumption that the Green Deal would appeal to all types of people in society:

> We'd done some research on the general population, we understood quite a lot about people's motivations and barriers to energy efficiency, but we soon began to realize that actually this isn't a one-size-fits-all policy really. We don't understand enough about what sorts of groups exist and how they might respond differently to the policy. It's quite, you know, unique for a 'product'—which is almost what it is—to be targeted at everyone. Most kinds of things wouldn't be targeted at everyone. (A former social researcher in DECC (3)).

From late 2011 the government faced an on-going stream of criticism from journalists, opposition politicians, energy companies and academics, who warned that the Green Deal would fail because it lacked support from high street retailers, it was too complicated for consumers, and the cost of repayment would be too expensive[1] (Cuff, 2012; Eyre and Rosenow, 2012; Gosden, 2012).

In this context, and having already built a strong rapport with the Green Deal team, the social researchers challenged the assumption that this scheme could appeal to all types of householders across society without being tailored for different audiences. They persuaded their policy team colleagues to commission a segmentation model that would enable the government to make the communications campaigns more salient to the Green Deal's most likely customers. For this, survey participants who expressed an interest in energy insulation were divided up according to the reasons that were most likely to motivate them to take up the Green Deal (DECC, 2012b). Six segments were identified, and ranked according to the likely salience of the Green Deal to each group—ranging from "money savers" and "carbon savers" to the "overstretched". These segments were in turn used to design advertising campaigns targeted at particular audiences—which featured, for instance, in-home improvement publications and national newspapers.

The Green Deal scheme was launched fully in January 2013. A total of 20,000 measures were installed under a Green Deal plan by the end of 2015 (National Audit Office, 2016: 4), that is, millions less than even the "low" uptake scenario of 2010. The scheme was closed to new applicants in July 2015 by the new Secretary of State for Energy and Climate Change, Amber Rudd, on the grounds that it did not offer value for money for taxpayers (DECC, 2015a). A range of reasons have been invoked to explain the apparent failure of the Green Deal: the interest rate on loans and associated costs were described as too high for customers, the scheme was thought to be too complex, and consumer engagement was considered poor—particularly because of a "failure to understand the behavioural barriers preventing wide-scale take-up of energy efficiency measures" (House of Commons Energy and Climate Change Committee, 2016: 13). But thanks to effective evidence-based challenge from social researchers, the Green Deal policy officials now also see that it was problematic to assume that this particular scheme would have universal appeal across groups in society without targeting it at a defined customer group—or targeting it differently to different groups. Reflecting on this, a policy official recently commented that:

> there probably was a market for the Green Deal but it was somewhere in between people in fuel poverty who probably wouldn't be able to afford it and where it might not be appropriate to take out a loan, and others who could afford to do it without a loan (A policy official in DECC (1)).

The same official added that recognizing the variation among the population would lead them to target approximately four million households, rather than all households in the United Kingdom. In this sense, social researchers' challenge function has contributed towards a gradual change in the policy framing, towards a model where energy efficiency schemes are designed by starting with an understanding of diverse perspectives and interests among citizens. This would involve identifying different groups in society and developing an energy efficiency scheme with the knowledge of how different groups are likely to respond to it from the outset. And now that DECC has the in-house social research expertise for this, the department is better placed to aid the design and delivery of such a policy than it was in 2009.[2]

Social research and smart meters

A second policy area where social researchers provided an important challenge function is smart meters implementation—but this time their challenge was directed more towards energy suppliers than to their internal colleagues. A smart meter records and transmits energy consumption data to a property's energy supplier (DECC, 2013). With an in-home display, householders can use smart meters to monitor their energy consumption, and government ministers considered this a key means by which carbon emissions could be reduced (DECC, 2011f). In summer 2009, the European Union ruled that member states should introduce smart meter-type technology, subject to a favourable economic analysis of the costs and benefits (Council Regulation (EC), 2009). But, as with the Green Deal, the realization of energy savings and reductions in carbon emissions relied upon engagement from citizens.

DECC's economic assessment estimated that smart meters would bring significant consumer benefits to households, primarily in terms of stimulating reductions in energy use and therefore in utility bills (DECC, 2011f). This cost-benefit analysis was informed by academic studies providing evidence that under

some circumstances, the introduction of feedback devices in homes could help consumers to reduce their energy use by as much as 10–15% in a year (Darby, 2006; Fischer, 2008). Acknowledging a wide range of estimates in the existing literature, the authors of the economic assessment adopted relatively conservative assumptions about the likely annual reductions in demand: 2.8% reductions in electricity demand, 2% reductions in gas consumption for users on a credit-based system, and 0.5% for gas users with pre-payment meters (DECC, 2011f: 30). However, by the time this assessment was produced in March 2011, DECC's analysts did not provide detailed plans on how these savings would be achieved in the proposed national roll-out. Nor was there any clear strategy on how the installation process and subsequent consumer engagement activities could be arranged to maximize the amount and duration of households' energy savings.

Nonetheless, the foundation phase of the national roll-out had now commenced, which meant that energy suppliers were permitted to begin installing smart meters in homes around the United Kingdom. The foundation stage was scheduled to end in spring 2014, before which the government planned to create the supporting communications infrastructure, set technical standards for smart metering units and specify licence obligations on suppliers (DECC, 2011f: 18). The mass roll-out stage would then start, before which energy suppliers would not be expected to comply with government guidance or obligations, since these were still in development.

In June 2011, the National Audit Office (an independent body that scrutinizes government expenditure) raised concerns about the government's plans for the smart meter roll-out, pointing to uncertainty over the amount of savings consumers will make, and how long they would benefit for (National Audit Office, 2011). This put additional pressure on the department to ensure that consumer benefits would be realized to the greatest extent possible.

Social researchers joined the smart meters implementation team in spring 2011, to design an evaluation of energy suppliers' mandated installation of smart devices and in-home displays across UK households. In line with the National Audit Office's (2011: 11) recommendations, it was important for social researchers and their internal colleagues that the realization of consumer benefits would be evaluated during the foundation phase, so that lessons could be taken forward and changes made where necessary.

Energy supplier representatives' perspectives on evaluation differed from that of the government officials'. Their priority was to ensure they achieved a target number of installations with a high degree of customer satisfaction, while protecting commercially sensitive information about their roll-out strategies and minimizing the possibility for any external factors to burden or complicate the process (AECOM, 2011: 2). These commercial interests and desires to protect information threatened to thwart social researchers' plans to learn from the earliest installations. Committed to performing a strong challenge function however, they negotiated an arrangement enabling studies of a sample of the installations from two suppliers to be conducted. The studies included an analysis of levels of energy saving and other benefits without publicly revealing sensitive information.

The resulting research projects were used to help the smart meters implementation team to gain insights into the ways that households are engaging with smart meters in practice, and what could be done to improve the installation process. A particularly useful finding for the team was the identification of two distinct approaches towards using the in-home display (DECC, 2015b: 58). One group of users took an "information-driven approach", looking at the in-home display to see how much energy was being consumed at a given moment. By contrast, those users who adopted a "monitoring approach" would use the device to monitor their energy use—for example, by checking if any appliances could be switched off before leaving the house or going to sleep, or by comparing their consumption on a daily basis. These insights are consistent with STS literature in emphasizing that decision makers should expect variation in users' engagement with technological devices (Oudshoorn *et al.*, 2004: 44). They thereby challenge the determinist view that new technologies will, of themselves, shape behaviours in universal and predictable ways (Winner, 1980), which is said to be persistent amongst policymakers (Wyatt, 2008).

Some of the social researchers' studies attracted scrutiny from economists within the department, who questioned the value of qualitative research on samples that are not representative of the broader population. However, the social researchers could convincingly address the economists' qualms by pointing to the value in in-depth insights for developing ideas to improve the roll-out process. As a result of the findings from these studies, the team have since commissioned an action research project designed to support them in developing good practice energy efficiency advice and guidance materials for installers.

Reflecting on the social researchers' commitment to providing a challenge function, a policy official commented:

> I think the social research people worry far more about this than any other analytical discipline that I've come across. They take it seriously. (A policy official in DECC (2)).

The same official revealed that this work led to the smart meters implementation team winning an internal award for their use of research.

This work is still on-going at the time of writing (summer 2016), but multiple interviewees have emphasized that that the social researchers' projects have enabled policy officials to develop an evidence-based plan to improve how installers engage with households. In turn, this could improve the extent to which consumer benefits will be realized. Under favourable circumstances—in which DECC's officials were committed to learning from the foundation stage—social researchers were able to effectively exercise challenge and thereby achieve visible and immediate impact with the research they produced.

Constraints on the social research challenge function in DECC

The previous two sections have provided examples of social researchers exercising an effective challenge function to address issues within the Green Deal and smart metering policy areas. We saw that naïve assumptions about citizens were confronted, and that research efforts were made to gain empirical and robust insights into how different citizens are likely to engage with the government's proposals. As such, these examples raise questions over academic depictions of the civil service as resistant to criticism (c.f. LSE GV314 Group, 2014).

However, DECC's social researchers did identify contextual constraints on their abilities to exercise challenge. Consistent with the existing literature, social researchers reported a prevalence of instrumental rationales amongst policy officials (Wynne, 1993; Chilvers and Macnaghten, 2011: 539; Pallett and Chilvers, 2013), and this limited researchers' ability to provide useful challenge in specific circumstances. While policy officials in the Green Deal and smart meters teams deemed evidence about consumers important to their objectives, the social researchers were aware that analysis which is deemed to be ill-timed would not be well-received nor reflect well on their professionalism. This issue was particularly pertinent in the Green Deal and smart meters policy

areas, since by the time that social researchers joined those teams there was a strong ministerial drive for delivering both policies. Researchers questioning or reframing core ideas would therefore be "unwelcome" at that stage:

> Insights from research that challenge at some level the basis on which policies have been constructed—those insights are unwelcome when the policy is being delivered—obviously they are unwelcome. (A former social researcher in DECC (1)).

The analysts' provision of challenge thus involves making a situated judgement, which depends, at least in part, on whether their insights could be constructively engaged with within the current context. But as we saw in the previous sections, this did not mean the researchers would hold back from challenge altogether. Rather, they would apply their challenge towards what they deemed achievable outcomes under the circumstances. This not only resulted in a direct and immediate form of influence, but also laid down the seeds for a gradual changing of the policy framings informed by better understandings of citizens (Owens, 2015: 136). The implication is that, as academic social scientists have advocated for many years (Lowe *et al.*, 2008)—and as is now appreciated by policy officials in DECC, earlier engagement with social science would provide opportunities for policy ideas to be designed with an empirically informed understanding of citizens in mind.

A second constraint is found in the way that government analysts' expertise is defined and assessed. Analysts in the civil service are graded according to their competencies—as measured based on their experiences—and this does not take into account their in-depth knowledge with respect to a particular policy area.[3] While this helps to develop a versatile workforce, a knowledge gap can emerge. As the former Head of Customer Insights explains below, this was an issue preventing the effective exercise of challenge, at least when the Customer Insight Team first began to expand:

> I was thinking 'oh, why aren't they raising these things in meetings? These things are really obvious.' And then I thought —the reason they are really obvious to me is that I've spent five years talking to people about them! And my team haven't! And then I set about trying to close some of that gap so that my team had a bit more of the knowledge that I had. (DECC's former Head of Customer Insight).

In this regard, it was fortunate that the Head of Customer Insight came from outside of the civil service and could therefore bring in topical knowledge based on many years of experience conducting research about citizens' engagement with energy and environment issues.

Last, social researchers described an epistemic hierarchy within the structures of the civil service, such that social researchers are among the least senior officials in department and often least well-resourced, while economists, scientists and engineers are afforded more influence. This does not always work against social researchers—as we saw previously, some scientists and economists used their influence to make the case for DECC to employ social researchers in the first place. But, occasionally, these actors make unempirical claims about citizens which trouble social researchers. As one researcher recalled, challenging analysts at the most senior level in the department was "probably the single hardest thing to manage":

> You know there are ways of doing it, but there's also reasons why you wouldn't in certain instances, because you wanna kind of build their trust, not just show that you're a kind of arsey social scientist who's always critical. (A former social researcher in DECC (4)).

This perspective is particularly revealing when taken in contrast with the explanation provided by GO-Science for analysts holding back on challenge (Government Office for Science, 2013: 20). It shows that while confidence may be a factor for some researchers, the difference in civil servants' relative status in the department can compel a confident analyst to "pick battles", rather than to challenge every time one disagrees with a senior colleague.

Conclusions

This article has provided clear examples of government social researchers providing a challenge function within the Green Deal and smart meters policy areas. As we may have expected given the literature, the inclusion of social researchers in these policy areas was predicated on instrumental rationales, rather than a commitment to encourage reflection on how citizens are imagined (Wynne, 1993; Chilvers and Macnaghten, 2011; Pallett and Chilvers, 2013). The researchers were expected to help maximize the uptake of the Green Deal among citizens, and to ensure that consumer benefits from the smart meters roll-out would be as high as possible. But, consistent with Owens's observation that under the right circumstances experts need not be constrained by the instrumental role ascribed to them (Owens, 2015: 16), social researchers went beyond the instrumental functions that they were expected to perform. This was most clear in the case of the Green Deal, where the researchers challenged the assumption that this was an appropriate scheme for engaging all types of people across society. In this light, claims that instrumental rationales preclude transformative learning about citizens seem misguided. Rather, more empirical studies are required to understand the circumstances in which better understandings of citizens do constructively challenge policy-makers' assumptions.

Experts' vying for epistemic recognition within the UK's civil service is not a new phenomenon. Historians have written similar accounts highlighting the contingent political and institutional reasons why medical and natural science expertise came to be appreciated and institutionalized within Whitehall (Gummett, 1980; Clarke, 2007; Sheard, 2010). However, what is novel here is the observation that there is now formal recognition of the importance of evidence-based *challenge* itself in contributing to the effectiveness of a government body. To this end, individual analysts are held to account on the challenge they provide, and rewarded when this is deemed effective. This, in itself, is a commendable step towards improving the UK government's use of scientific advice.

But the civil service (and GO-Science in particular) could go further by supplementing individualist accounts of challenge with a greater appreciation of the social and material context that can shape its effective operation. We have seen that social researchers' influence depends on factors such as whether policy officials seek their advice at an early enough stage in the policy process, the encouragement they receive from senior figures (for example, the Cabinet Office's capability reviews team and the National Audit Office), the rapport they have built with their colleagues, the resources at their disposal, and their relative status in the civil service hierarchy. More attention to these issues may aid GO-Science and others to strengthen analysts' capacity to challenge where this is found amiss.

Notes

1 Although some writers pointed out that the finance was relatively cheap as it was fixed for the period of the agreed plan, and would be covered through the savings made by the household (Guertler *et al.*, 2013: 157).

2 This assessment was justified at the time of writing, prior to the transfer of DECC's responsibilities to the new Department for Business, Energy and Industrial Strategy under Theresa May's Conservative Government. (Rincon, 2016).
3 See Adam Cooper's article in this thematic collection for more on the matter of topical expertise in the civil service.

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Data availability

The interview-based data generated and analysed for the current study are not publicly available due to interviewees' terms for interview. But the author welcomes opportunities to collaborate with anybody interested in the data.

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